

IN THE CLAIMS

1. - 7. (cancelled)
8. (new) In a first wireless communication device, a method of carrying out wireless communication with a second wireless communication device, said method comprising:
 - (a) selecting a highest frequency band from a plurality of frequency bands;
 - (b) determining whether the selected frequency band includes an unused channel in which no disturbing wave is present;
 - (c) when the selected frequency band includes the unused channel in which no disturbing wave is present, determining a maximum transmission rate at which a received field strength value exceeds a threshold value from a plurality of transmission rates associated with the selected frequency band;
 - (d) when the selected frequency band does not include an unused channel or does not include an unused channel in which no disturbing wave is present or when the selected frequency band includes the unused channel in which no disturbing wave is present there is no transmission rate associated with the selected frequency band at which the received field strength value exceeds the threshold value, selecting the next highest frequency band from the plurality of frequency bands and repeating steps (b) through (d) using the next highest frequency band as the selected frequency band; and
 - (e) when the maximum transmission rate is successfully determined in step (c), initiating communication with the second wireless communication device using the unused channel of the selected frequency band as a communication channel at the determined maximum transmission rate.

9. (new) A method according to claim 8, wherein when none of the plurality of frequency bands includes an unused channel or when none of the plurality of frequency bands includes an unused channel in which no disturbing wave is present, said method further comprises: setting a predetermined channel of a predetermined frequency band as the communication channel, setting a predetermined transmission rate for the communication channel, and then initiating communication with the second wireless communication device using the communication channel at the predetermined transmission rate.

10. (new) A method according to claim 8, wherein when none of the plurality of frequency bands includes an unused channel or when none of the plurality of frequency bands includes an unused channel in which no disturbing wave is present, said method further comprises: transmitting a message to the second wireless communication device indicating that communication cannot be carried out.

11. (new) A method according to claim 8, wherein said step of determining whether the selected frequency band includes an unused channel in which no disturbing wave is present includes:

determining whether the selected frequency band includes a first unused channel,

when the selected frequency band includes the first unused channel, determining whether a disturbing wave is present in the first unused channel,

when no disturbing wave is present in the first unused channel, defining the first unused channel as the unused channel in which no disturbing wave is present, and

when the disturbing wave is present in the first unused channel,

(i) determining whether the selected frequency band includes another unused channel,

(ii) when the selected frequency band includes the another unused channel, determining whether a disturbing wave is present in the another unused channel,

(iii) when the disturbing wave is present in the another unused channel, repeating steps (i) through (iii) using yet another unused channel in place of the another unused channel, and

(iv) when no disturbing wave is present in the another unused channel, defining the another unused channel as the unused channel in which no disturbing wave is present.

12. (new) A method according to claim 8, wherein said step of determining a maximum transmission rate at which a received field strength value exceeds the threshold value includes:

determining whether a received field strength value at a highest one of the plurality of transmission rates transmission rate exceeds the threshold value,

when the highest one of the plurality of transmission rates exceeds the threshold value, designating the highest one of the plurality of transmission rates as the maximum transmission rate; and

when the highest one of the plurality of transmission rates does not exceed the threshold value,

(i) determining whether a next lower one of the plurality of transmission rates exceeds the threshold value,

(ii) when the next lower one of the plurality of transmission rates exceeds the threshold value, designating the next lower one of the plurality of transmission rates as the maximum transmission rate,

(iii) when the next lower one of the plurality of transmission rates does not exceed the threshold value, repeating steps (i) through (iii) until either steps (i) through (iii) are carried out for a least one of the plurality of transmission rates or the next lower one of the plurality of transmission rates is a lowest acceptable transmission rate, and

(iv) when the next lower one of the plurality of transmission rates is the lowest acceptable transmission rate, setting that transmission rate as the maximum transmission rate without determining whether the received field strength value at that transmission rate exceeds the threshold value.

13. (new) In a first wireless communication device, a method of carrying out wireless communication with a second wireless communication device, said method comprising:

periodically determining, during communication with the second wireless communication device using a particular channel of a given one of a plurality of frequency bands as a communication channel, whether a disturbing wave is present in the communication channel; and

when the disturbing wave is present in the communication channel,

(a) determining whether the given one of the plurality of frequency bands includes an unused channel in which no disturbing wave is present,

(b) when the given one of the plurality of frequency bands includes the unused channel in which no disturbing wave is present, determining a maximum transmission rate at which a received field strength value exceeds a threshold value from a plurality of transmission rates associated with the given one of the plurality of frequency bands,

(c) when the given one of the plurality of frequency bands does not include an unused channel or does not include an unused channel in which no disturbing wave is present or when the given one of the plurality of frequency bands includes the unused channel in which no disturbing wave is present but none of the associated plurality of transmission rates provides a received field strength value that exceeds the threshold value, substituting another one of the plurality of frequency bands for the given one of the plurality of frequency bands and then repeating steps (a) through (c), and

(d) when the maximum transmission rate is successfully determined in step (b), continuing communication with the second wireless communication device using the unused channel as the communication channel at the determined maximum transmission rate.

14. (new) A method according to claim 13, further comprising:

when none of the plurality of frequency bands includes an unused channel or when none of the plurality of frequency bands includes an unused channel in which no disturbing wave is present, continuing communication with the second wireless communication device for a predetermined time period using the given one of the plurality of frequency bands as the communication channel.

15. (new) A method according to claim 13, wherein said step of determining whether the given one of the plurality of frequency bands includes an unused channel in which no disturbing wave is present includes:

determining whether the given one of the plurality of frequency bands includes a first unused channel,

when the given one of the plurality of frequency bands includes the first unused channel, determining whether a disturbing wave is present in the first unused channel,

when no disturbing wave is present in the first unused channel, defining the first unused channel as the unused channel in which no disturbing wave is present, and

when the disturbing wave is present in the first unused channel,

(i) determining whether the given one of the plurality of frequency bands includes another unused channel,

(ii) when the given one of the plurality of frequency bands includes the another unused channel, determining whether a disturbing wave is present in the another unused channel,

(iii) when the disturbing wave is present in the another unused channel, repeating steps (i) through (iii) using yet another unused channel in place of the another unused channel, and

(iv) when no disturbing wave is present in the another unused channel, defining the another unused channel as the unused channel in which no disturbing wave is present.

16. (new) A method according to claim 13, wherein said step of determining a maximum transmission rate at which a received field strength value exceeds the threshold value includes:

determining whether a received field strength value at a highest one of the plurality of transmission rates transmission rate exceeds the threshold value,

when the highest one of the plurality of transmission rates exceeds the threshold value, designating the highest

one of the plurality of transmission rates as the maximum transmission rate; and

when the highest one of the plurality of transmission rates does not exceed the threshold value,

(i) determining whether a next lower one of the plurality of transmission rates exceeds the threshold value,

(ii) when the next lower one of the plurality of transmission rates exceeds the threshold value, designating the next lower one of the plurality of transmission rates as the maximum transmission rate,

(iii) when the next lower one of the plurality of transmission rates does not exceed the threshold value, repeating steps (i) through (iii) until either steps (i) through (iii) are carried out for a least one of the plurality of transmission rates or the next lower one of the plurality of transmission rates is a lowest acceptable transmission rate, and

(iv) when the next lower one of the plurality of transmission rates is the lowest acceptable transmission rate, setting that transmission rate as the maximum transmission rate without determining whether the received field strength value at that transmission rate exceeds the threshold value.

17. (new) In a first wireless communication device, a method of carrying out wireless communication with a second wireless communication device, said method comprising:

periodically determining, during communication with the second wireless communication device at a particular one of a plurality of transmission rates associated with a given frequency band, whether the plurality of transmission rates includes at least one transmission rate that is higher than the particular transmission rate;

when the plurality of transmission rates includes the at least one transmission rate higher than the particular transmission rate, determining whether a received field strength value at one of the plurality of transmission rates that is immediately higher than the particular one of a plurality of transmission rates exceeds a threshold value;

when the plurality of transmission rates does not include the at least one transmission rate higher than the particular transmission rate or when the received field strength value at the immediately higher one of the plurality of transmission rates does not exceed the threshold value, continuing the communication with the second wireless communication device at the particular transmission rate; and

when the received field strength value at the immediately higher one of the plurality of transmission rates exceeds the threshold value,

(i) determining whether a next higher one of the plurality of transmission rates exists,

(ii) when the next higher one of the plurality of transmission rates exists, determining whether the received field strength value at the next higher one of the plurality of transmission rates exceeds the threshold value,

(iii) when the received field strength value at the next higher one of the plurality of transmission rates does not exceed the threshold value, continuing communication with the second wireless communication device at an immediately lower one of the plurality of transmission rates, and

(iv) when the received field strength value at the next higher one of the plurality of transmission

rates exceeds the threshold value, repeating steps (i) through (iv) until the next higher one of the plurality of transmission rates is a highest one of the plurality of transmission rates.

18. (new) In a first wireless communication device, a method of carrying out wireless communication with a second wireless communication device, said method comprising:

periodically determining, during communication with the second wireless communication device at a particular one of a plurality of transmission rates associated with a given frequency band, whether a received field strength value at the particular one of the plurality of transmission rates exceeds a threshold value;

when the received field strength value at the particular one of the plurality of transmission rates exceeds the threshold value, continuing the communication with the second wireless communication device at the particular one of the plurality of transmission rates;

when the received field strength value at the particular one of the plurality of transmission rates does not exceed the threshold value, determining whether the received field strength value at an immediately lower one of the plurality of transmission rates exceeds the threshold value;

when the received field strength value at the immediately lower one of the plurality of transmission rates exceeds the threshold value, continuing the communication with the second wireless communication device at the immediately lower one of the plurality of transmission rates; and

when the received field strength value at the immediately lower one of the plurality of transmission rates does not exceed the threshold value,

(i) determining whether a next lower one of the plurality of transmission rates exceeds the threshold value,

(ii) when the next lower one of the plurality of transmission rates exceeds the threshold value, continuing the communication with the second wireless communication device at the next lower one of the plurality of transmission rates,

(iii) when the next lower one of the plurality of transmission rates does not exceed the threshold value, repeating steps (i) through (iii) until steps (i) through (iii) are carried out for a least one of the plurality of transmission rates or until the next lower one of the plurality of transmission rates is a lowest acceptable transmission rate, and

(iv) when the next lower one of the plurality of transmission rates a lowest acceptable transmission rate, setting that transmission rate as the maximum transmission rate without determining whether the received field strength value at that transmission rate exceeds the threshold value.

19. (new) A method according to claim 18, wherein when the received field strength value at the least one of the plurality of transmission rates does not exceed the threshold value, said method further comprises:

selecting another frequency band,
determining whether the another frequency band includes an unused channel in which no disturbing wave is present,

when the another frequency band includes the unused channel in which no disturbing wave is present,

determining a maximum transmission rate associated with the another frequency band at which

the received field strength value exceeds the threshold value, and

continuing communication with the second wireless communication device using the unused channel as the communication channel at the determined maximum transmission rate, and

when the another frequency band does not include an unused channel or does not include an unused channel in which no disturbing wave is present or when the another frequency band includes the unused channel in which no disturbing wave is present but there is no transmission rate associated with the another frequency band at which the received field strength value exceeds the threshold value, continuing communication with the second wireless communication device using the particular channel of the given frequency band as the communication channel at a lowest transmission rate associated with the given frequency band.

20. (new) A wireless communication apparatus for carrying out wireless communication with another wireless communication apparatus, said apparatus comprising:

means for selecting a highest frequency band from a plurality of frequency bands;

means for (a) determining whether the selected frequency band includes an unused channel in which no disturbing wave is present, (b) when the selected frequency band includes the unused channel in which no disturbing wave is present, determining a maximum transmission rate at which a received field strength value exceeds a threshold value from a plurality of transmission rates associated with the selected frequency band, and (c) when the selected frequency band does not include an unused channel or does not include an unused channel in which no disturbing wave

is present or when the selected frequency band includes the unused channel in which no disturbing wave is present there is no transmission rate associated with the selected frequency band at which the received field strength value exceeds the threshold value, selecting the next highest frequency band from the plurality of frequency bands and repeating (a) through (c) using the next highest frequency band as the selected frequency band; and

means for, when the maximum transmission rate is successfully determined, initiating communication with the another wireless communication apparatus using the unused channel of the selected frequency band as a communication channel at the determined maximum transmission rate.

21. (new) An apparatus according to claim 20, further comprising: means for, when none of the plurality of frequency bands includes an unused channel or when none of the plurality of frequency bands includes an unused channel in which no disturbing wave is present, setting a predetermined channel of a predetermined frequency band as the communication channel, setting a predetermined transmission rate for the communication channel, and then initiating communication with the another wireless communication apparatus using the communication channel at the predetermined transmission rate.

22. (new) An apparatus according to claim 20, further comprising: means for, when none of the plurality of frequency bands includes an unused channel or when none of the plurality of frequency bands includes an unused channel in which no disturbing wave is present, transmitting a message to the another wireless communication apparatus indicating that communication cannot be carried out.

23. (new) An apparatus according to claim 20, wherein said means for determining whether the selected frequency band

includes an unused channel in which no disturbing wave is present includes:

means for determining whether the selected frequency band includes a first unused channel,

means for, when the selected frequency band includes the first unused channel, determining whether a disturbing wave is present in the first unused channel,

means for, when no disturbing wave is present in the first unused channel, defining the first unused channel as the unused channel in which no disturbing wave is present, and

means for, when the disturbing wave is present in the first unused channel, (i) determining whether the selected frequency band includes another unused channel, (ii) when the selected frequency band includes the another unused channel, determining whether a disturbing wave is present in the another unused channel, (iii) when the disturbing wave is present in the another unused channel, repeating (i) through (iii) using yet another unused channel in place of the another unused channel, and (iv) when no disturbing wave is present in the another unused channel, defining the another unused channel as the unused channel in which no disturbing wave is present.

24. (new) An apparatus according to claim 20, wherein said means for determining a maximum transmission rate at which a received field strength value exceeds the threshold value includes:

means for determining whether a received field strength value at a highest one of the plurality of transmission rates transmission rate exceeds the threshold value,

means for, when the highest one of the plurality of transmission rates exceeds the threshold value, designating

the highest one of the plurality of transmission rates as the maximum transmission rate; and

means for, when the highest one of the plurality of transmission rates does not exceed the threshold value, (i) determining whether a next lower one of the plurality of transmission rates exceeds the threshold value, (ii) when the next lower one of the plurality of transmission rates exceeds the threshold value, designating the next lower one of the plurality of transmission rates as the maximum transmission rate, (iii) when the next lower one of the plurality of transmission rates does not exceed the threshold value, repeating (i) through (iii) until either (i) through (iii) are carried out for a least one of the plurality of transmission rates or the next lower one of the plurality of transmission rates is a lowest acceptable transmission rate, and (iv) when the next lower one of the plurality of transmission rates is the lowest acceptable transmission rate, setting that transmission rate as the maximum transmission rate without determining whether the received field strength value at that transmission rate exceeds the threshold value.

25. (new) A wireless communication apparatus for carrying out wireless communication with another wireless communication apparatus, said apparatus comprising:

means for periodically determining, during communication with the another wireless communication apparatus using a particular channel of a given one of a plurality of frequency bands as a communication channel, whether a disturbing wave is present in the communication channel; and

means for, when the disturbing wave is present in the communication channel, (a) determining whether the given one of the plurality of frequency bands includes an unused

channel in which no disturbing wave is present, (b) when the given one of the plurality of frequency bands includes the unused channel in which no disturbing wave is present, determining a maximum transmission rate at which a received field strength value exceeds a threshold value from a plurality of transmission rates associated with the given one of the plurality of frequency bands, (c) when the given one of the plurality of frequency bands does not include an unused channel or does not include an unused channel in which no disturbing wave is present or when the given one of the plurality of frequency bands includes the unused channel in which no disturbing wave is present but none of the associated plurality of transmission rates provides a received field strength value that exceeds the threshold value, substituting another one of the plurality of frequency bands for the given one of the plurality of frequency bands and then repeating (a) through (c), and (d) when the maximum transmission rate is successfully determined, continuing communication with the another wireless communication apparatus using the unused channel as the communication channel at the determined maximum transmission rate.

26. (new) An apparatus according to claim 25, further comprising:

means for, when none of the plurality of frequency bands includes an unused channel or when none of the plurality of frequency bands includes an unused channel in which no disturbing wave is present, continuing communication with the another wireless communication apparatus for a predetermined time period using the given one of the plurality of frequency bands as the communication channel.

27. (new) An apparatus according to claim 25, wherein said means for determining whether the given one of the plurality of frequency bands includes an unused channel in which no disturbing wave is present includes:

means for determining whether the given one of the plurality of frequency bands includes a first unused channel,

means for, when the given one of the plurality of frequency bands includes the first unused channel, determining whether a disturbing wave is present in the first unused channel,

means for, when no disturbing wave is present in the first unused channel, defining the first unused channel as the unused channel in which no disturbing wave is present, and

means for, when the disturbing wave is present in the first unused channel, (i) determining whether the given one of the plurality of frequency bands includes another unused channel, (ii) when the given one of the plurality of frequency bands includes the another unused channel, determining whether a disturbing wave is present in the another unused channel, (iii) when the disturbing wave is present in the another unused channel, repeating (i) through (iii) using yet another unused channel in place of the another unused channel, and (iv) when no disturbing wave is present in the another unused channel, defining the another unused channel as the unused channel in which no disturbing wave is present.

28. (new) An apparatus according to claim 25, wherein said means for determining a maximum transmission rate at which a received field strength value exceeds the threshold value includes:

means for determining whether a received field strength value at a highest one of the plurality of transmission rates transmission rate exceeds the threshold value,

means for, when the highest one of the plurality of transmission rates exceeds the threshold value, designating the highest one of the plurality of transmission rates as the maximum transmission rate; and

means for, when the highest one of the plurality of transmission rates does not exceed the threshold value, (i) determining whether a next lower one of the plurality of transmission rates exceeds the threshold value, (ii) when the next lower one of the plurality of transmission rates exceeds the threshold value, designating the next lower one of the plurality of transmission rates as the maximum transmission rate, (iii) when the next lower one of the plurality of transmission rates does not exceed the threshold value, repeating (i) through (iii) until either (i) through (iii) are carried out for a least one of the plurality of transmission rates or the next lower one of the plurality of transmission rates is a lowest acceptable transmission rate, and (iv) when the next lower one of the plurality of transmission rates is the lowest acceptable transmission rate, setting that transmission rate as the maximum transmission rate without determining whether the received field strength value at that transmission rate exceeds the threshold value.

29. (new) A wireless communication apparatus for carrying out wireless communication with another wireless communication apparatus, said apparatus comprising:

means for periodically determining, during communication with the another wireless communication apparatus at a particular one of a plurality of

transmission rates associated with a given frequency band, whether the plurality of transmission rates includes at least one transmission rate that is higher than the particular transmission rate;

means for, when the plurality of transmission rates includes the at least one transmission rate higher than the particular transmission rate, determining whether a received field strength value at one of the plurality of transmission rates that is immediately higher than the particular one of a plurality of transmission rates exceeds a threshold value;

means for, when the plurality of transmission rates does not include the at least one transmission rate higher than the particular transmission rate or when the received field strength value at the immediately higher one of the plurality of transmission rates does not exceed the threshold value, continuing the communication with the another wireless communication apparatus at the particular transmission rate; and

means for, when the received field strength value at the immediately higher one of the plurality of transmission rates exceeds the threshold value, (i) determining whether a next higher one of the plurality of transmission rates exists, (ii) when the next higher one of the plurality of transmission rates exists, determining whether the received field strength value at the next higher one of the plurality of transmission rates exceeds the threshold value, (iii) when the received field strength value at the next higher one of the plurality of transmission rates does not exceed the threshold value, continuing communication with the another wireless communication apparatus at an immediately lower one of the plurality of transmission rates, and (iv) when the received field strength value at

the next higher one of the plurality of transmission rates exceeds the threshold value, repeating (i) through (iv) until the next higher one of the plurality of transmission rates is a highest one of the plurality of transmission rates.

30. (new) A wireless communication apparatus for carrying out wireless communication with another wireless communication apparatus, said apparatus comprising:

means for periodically determining, during communication with the another wireless communication apparatus at a particular one of a plurality of transmission rates associated with a given frequency band, whether a received field strength value at the particular one of the plurality of transmission rates exceeds a threshold value;

means for, when the received field strength value at the particular one of the plurality of transmission rates exceeds the threshold value, continuing the communication with the another wireless communication apparatus at the particular one of the plurality of transmission rates;

means for, when the received field strength value at the particular one of the plurality of transmission rates does not exceed the threshold value, determining whether the received field strength value at an immediately lower one of the plurality of transmission rates exceeds the threshold value;

means for, when the received field strength value at the immediately lower one of the plurality of transmission rates exceeds the threshold value, continuing the communication with the another wireless communication apparatus at the immediately lower one of the plurality of transmission rates; and

means for, when the received field strength value at the immediately lower one of the plurality of transmission rates does not exceed the threshold value, (i) determining whether a next lower one of the plurality of transmission rates exceeds the threshold value, (ii) when the next lower one of the plurality of transmission rates exceeds the threshold value, continuing the communication with the another wireless communication apparatus at the next lower one of the plurality of transmission rates, (iii) when the next lower one of the plurality of transmission rates does not exceed the threshold value, repeating (i) through (iii) until (i) through (iii) are carried out for a least one of the plurality of transmission rates or until the next lower one of the plurality of transmission rates is a lowest acceptable transmission rate, and (iv) when the next lower one of the plurality of transmission rates a lowest acceptable transmission rate, setting that transmission rate as the maximum transmission rate without determining whether the received field strength value at that transmission rate exceeds the threshold value.

31. (new) An apparatus according to claim 30, further comprising:

means for, when the received field strength value at the least one of the plurality of transmission rates does not exceed the threshold value, selecting another frequency band, determining whether the another frequency band includes an unused channel in which no disturbing wave is present, when the another frequency band includes the unused channel in which no disturbing wave is present, (i) determining a maximum transmission rate associated with the another frequency band at which the received field strength value exceeds the threshold value, and (ii) continuing communication with the another wireless

communication apparatus using the unused channel as the communication channel at the determined maximum transmission rate, and when the another frequency band does not include an unused channel or does not include an unused channel in which no disturbing wave is present or when the another frequency band includes the unused channel in which no disturbing wave is present but there is no transmission rate associated with the another frequency band at which the received field strength value exceeds the threshold value, continuing communication with the another wireless communication apparatus using the particular channel of the given frequency band as the communication channel at a lowest transmission rate associated with the given frequency band.